IN THE SPECIFICATION

Please delete the title and replace it with the following replacement title:

DETECTION OF FAULTS IN LINEAR AND ROTARY VOLTAGE TRANSDUCERS

Please delete the paragraph beginning on page 3 at line 17 and ending on page 3 at line 26, and replace with the following replacement paragraph:

Short term filter 52 includes a multiplier 56 which multiplies the summed value by a short term weight factor 58. In an exemplary embodiment, the short term weight factor KST is 0.1. The weighted sum is then added at a summer 60 with a weighted value from a most previous sum. Specifically, the ~~most~~ previous short term sum value 62 is multiplied at a multiplier 64 by a weighting factor 66. In the exemplary embodiment, this weighting factor is 0.9. This weighted value is added at summer 60 with the current weighted value to provide a short term sum value. This current short term sum value is supplied to a summer 68. The current short term sum value also is stored in memory (not shown) so that it can be used in determining the next current short term sum value.

Please delete the paragraphs beginning on page 4 at line 3 and ending on page 5 at line 21, and replace with the following replacement paragraphs:

More specifically, long term filter 54 includes a multiplier 70 which multiplies the summed value by a long term weight factor 72. In an exemplary embodiment, the long term weight factor KLT is 0.0005. The weighted sum is then added at a summer 74 with a weighted value from a most previous sum. Specifically, the ~~most~~ previous long term sum value 76 is multiplied at a multiplier 78 by a weighting factor 80. In the exemplary embodiment, this weighting factor is 0.9995. This weighted value is added at summer 74 with the current weighted value to provide a long term sum value. This long term sum value is supplied to summer 68. The current long term sum value also is stored in memory (not shown) so that it can be used in determining the next current ~~short~~ long term sum value. In one embodiment, a comparator (not shown) is coupled to summer 68.

Again, the output of short term filter 52 is continuously summed at summer 68 with the output of long term filter 54. An absolute value 82 of this sum is obtained and is

designated as DLTST (i.e., difference between long term and short term filters 52 and 54. Depending upon the value of DLTST, certain actions may be taken as described below.

Specifically, in an exemplary embodiment, if the absolute value of DLTST exceeds 0.05 Vrms, then the output of long term filter 54 should be frozen, i.e., a control signal 84 should transition switch S from position 0 to position 1. This results in freezing the value of long term filter and the reference value from long term filter 54 remains constant, i.e., value 76. This relationship is represented below.

If DLTST > LTfreezeThresh

Then LTfreeze = 1

Else LTfreeze = 0,

where, LTfreezeThresh = 0.05, and where LtfreezeThresh represents a long term filter freeze threshold.

If the absolute value of ~~DLST~~ DLTST exceeds 0.08 Vrms, then a fault indication VDTFLT should be set. This relationship is represented below.

If DLTST > V1 + V2FLTThresh,

Then VDTFLT = 1,

Else VDTFLT = 0,

where, V1 + V2FLTThresh = 0.08, and where V2FLTThresh represents a fault threshold value.

If the absolute value of ~~DLST~~ DLTST is less than 0.08 Vrms, the fault indication should not be set. As the absolute value of DLTST changes between 0.04 Vrms and 0.08 Vrms, a confidence factor is generated which varies between 1.0 and 0.0, respectively. For absolute values of ~~DLST~~ DLTST less than 0.04 Vrms, the confidence factor should be 1.0, e.g., confident that no fault has occurred. For absolute values of DLTST values greater than 0.08 Vrms, the confidence factor should be 0.0, e.g., not confident that no fault has occurred. The confidence factor can be utilized in a control system to minimize the effect of an LVDT / RVDT failure.

An exemplary confidence factor is illustrated in a graph shown in Figure 3. As shown in Figure 3, when the Vrms value of the absolute value of DLTST is less than CFHiThresh, then a confidence ~~value~~ factor of 1 is assigned. When the Vrms value of the absolute value of DLTST is greater than CFLoThresh, then a confidence factor of 0 is assigned. For Vrms values of the absolute value of DLTST between CFHiThresh and CFLoThresh, a linear relationship between the Vrms value and the confidence factor is provided. Exemplary values of CFHiThresh and CFLoThresh are set forth below.